PORTABLE COMPUTER INHERENTLY CARRIED WITH OVERHEAD PROJECTION DEVICE

BACKGROUND OF THE INVENTION

U.S. Pat. No. 5,768,095 to Fusanobu Nakamura disclosed a portable computer having overhead projection capability. However, such a portable computer is adapted for use with an overhead projector, namely, the computer being absolutely separated from an overhead projector and requiring an additional overhead projector when intended for overhead projection purpose. It therefore has the following disadvantages:

1. An additional stand **(20)** and strap **(40)** should be provided for mounting the LCD display panel on an overhead projector as fastened by the strap **(40)** especially as shown in FIGS. **12**A, **12**B of the prior art (,095), causing inconvenience for overhead projection.
2. A heavy and big-volume overhead projector should be carried in addition to the portable computer, increasing handling complexity and inconvenience.
3. The detachment procedures for removing the rear cover **(51)** from the LCD display panel **(52)** secured on the lid **(50)** are quite complex and redundant when adapted for overhead projection use. Reversely, when it is intended for normal use as a portable computer, the "recovery" operations for re-assembling the rear cover **(51)** and the related components for "reconstruction" of the lid **(50)** are still complex and time-consuming.

The present inventor has found the drawbacks of the conventional art and invented the present portable computer having overhead projection device inherently carried thereon.

SUMMARY OF THE INVENTION

The object of the present invention is to provide a portable computer including: a main body having keyboard formed thereon, a cover pivotally secured to the main body and operatively covering the main body, a liquid crystal display panel formed on the cover, a backlight cartridge having a backlight and a light diffusion plate normally positioned under the liquid crystal display panel for illuminating the liquid crystal display (LCD) panel for normally displaying the image on the LCD panel, a bottom projection cartridge alternatively substituting the backlight cartridge and positioned under the LCD panel when adapted for overhead projection purpose, a supporting device pivotally secured and normally folded on the cover (or on the main body) and operatively telescopically extended from the cover (or from the main body) to be uprightly erected on the cover (or the main body), and an overhead projection cartridge detachably mounted on the supporting device for projecting light towards the bottom projection cartridge, through which the light is then reflected and magnified upwardly through the LCD panel for projecting the image of the LCD panel upwardly to be magnified and reflected towards a screen through the overhead projection cartridge, thereby providing a compact combination of a portable computer with an overhead projection device for convenient handling and uses.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is an illustration of the present invention.

FIG. **1***a* shows the present invention when closed.

FIG. **2** is an exploded view of the backlight cartridge above the bottom projection cartridge of the present invention.

FIG. **3** is an exploded view of the bottom projection cartridge above the backlight cartridge of the present invention.

FIG. **4** is a sectional drawing showing the light and image projection as effected by the present invention.

FIG. **5** is an exploded view of the supporting means of the present invention.

FIG. **6** shows another preferred embodiment of the present invention.

FIG. **7** is a partial sectional drawing of the supporting means on the cover of the present invention as shown in FIG. **6**.

FIG. **8** shows a partial sectional drawing of the overhead projection cartridge of FIG. **6**.

FIG. **9** shows still another preferred embodiment of the present invention.

FIG. **10** is a partial sectional drawing of the supporting means on the cover of FIG. **9**.

FIG. **11** is a partial sectional drawing of the overhead projection cartridge of FIG. **9**.

FIG. **12** is an illustration showing the storing of the supporting means and the overhead projection cartridge into the cover and the main body of FIG. **9**.

FIG. **13** is a perspective view of a further preferred embodiment of the present invention adapted for normal computer use.

FIG. **14** is an illustration of the computer of that as shown in FIG. **13** when provided for overhead projection use.

FIG. **15** shows still further preferred embodiment of the present invention.

DETAILED DESCRIPTION

As shown in FIGS. **1**~**5**, a preferred embodiment of the present invention comprises: a main body **1**, a cover **2** hingedly or pivotally secured to the main body **1**, a liquid crystal display (LCD) panel **3** formed on the cover **2**, a backlight cartridge **4** normally positioned under the LCD panel **3**, a bottom projection cartridge **5** juxtapositioned to the backlight cartridge **4** and alternatively positioned under the LCD panel **3**, a supporting means (or device) **6** pivotally, telescopically or detachably secured to the cover **2** (or secured to the main body **1** as shown in FIGS. **13**, **14**), and an overhead projection cartridge **7** detachably mounted on the supporting means **6**.

The portable computer of the present invention may be referred to a portable personal computer, a notebook computer, a portable information processing apparatus, or any portable computer-related equipments having computer components, peripherals and LCD display panel formed thereon, not limited in this invention.

The LCD panel **3** may also be replaced with other display panels for showing image as transmitted or processed by the computer.

The main body **1** includes: a keyboard **11** formed thereon, a hinge **12** for hingedly or pivotally connecting the cover **2** to the main body **1**, and a storing chamber **13** recessed in the main body **1** for storing the overhead projection cartridge **7** in the chamber **13** when detached from the supporting means **6** when not used for overhead projection.

The main body **1** is so conventional and not described in detail in this specification. The necessary CPU or other computer components and electronic circuits are also not described since they are conventional arts.

The cover **2** includes a frame **20** for securing the liquid crystal display panel **3** thereon, and a basement chamber **21**